

Practitioner's Docket No. KL0433US (#90232)

CHAPTER II

Preliminary Classification:

Proposed Class: 19

Subclass: 06

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.'" M.P.E.P., § 601, 7th ed.

TRANSMITTAL LETTER
TO THE UNITED STATES ELECTED OFFICE (EO/US)

(ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)

INTERNATIONAL APPLICATION NO. PCT/SG00/00122	INTERNATIONAL FILING DATE 23 AUGUST 2000	PRIORITY DATE CLAIMED 23 AUGUST 1999
TITLE OF INVENTION A CATCH		
APPLICANT(S) SIO, Yeok Sing		

Box PCT
Assistant Commissioner for Patents
Washington D.C. 20231

ATTENTION: EO/US

CERTIFICATION UNDER 37 C.F.R. § 1.10*

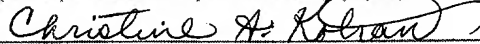
(Express Mail label number is mandatory.)

(Express Mail certification is optional.)

I hereby certify that this Transmittal Letter and the papers indicated as being transmitted therewith is being deposited with the United States Postal Service on this date 02/22/2002, in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number EF170374356US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Christine A. Kotran

(type or print name of person mailing paper)



Signature of person mailing paper

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. § 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

***WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 1 of 8)

10069211.022002

NOTE: To avoid abandonment of the application, the applicant shall furnish to the USPTO, not later than 20 months from the priority date: (1) a copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the USPTO; and (2) the basic national fee (see 37 C.F.R. § 1.492(a)). The 30-month time limit may not be extended. 37 C.F.R. § 1.495.

WARNING: Where the items are those which can be submitted to complete the entry of the international application into the national phase are subsequent to 30 months from the priority date the application is still considered to be in the international state and if mailing procedures are utilized to obtain a date the express mail procedure of 37 C.F.R. § 1.10 must be used (since international application papers are not covered by an ordinary certificate of mailing—See 37 C.F.R. § 1.8.

NOTE: Documents and fees must be clearly identified as a submission to enter the national state under 35 U.S.C. § 371 otherwise the submission will be considered as being made under 35 U.S.C. § 111. 37 C.F.R. § 1.494(f).

- I. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 U.S.C. § 371:
- XXX This express request to immediately begin national examination procedures (35 U.S.C. § 371(f)).
 - XXX The U.S. National Fee (35 U.S.C. § 371(c)(1)) and other fees (37 C.F.R. § 1.492) as indicated below:

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2. Fees

CLAIMS FEE	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS	
XXX	TOTAL CLAIMS	23 -20=	3	× \$18.00=	\$ 54.00	
	INDEPENDENT CLAIMS	1 -3=	---	× $\frac{24.00}{78.00}$ =	---	
	MULTIPLE DEPENDENT CLAIM(S) (if applicable) + \$260.00				---	
BASIC FEE**	<input type="checkbox"/> U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U.S. PTO: <input type="checkbox"/> and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(1) to (4) have been satisfied for all the claims presented in the application entering the national stage (37 C.F.R. § 1.492(a)(4)) \$96.00 <input type="checkbox"/> and the above requirements are not met (37 C.F.R. § 1.492(a)(1)) \$670.00 XXX U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in § 1.445(a)(2) to the U.S. PTO: <input type="checkbox"/> has been paid (37 C.F.R. § 1.492(a)(2)) \$690.00 <input type="checkbox"/> has not been paid (37 C.F.R. § 1.492(a)(3)) \$970.00 XXX where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 C.F.R. § 1.492(a)(5)) $\frac{890.00}{840.00}$					890.00
	Total of above Calculations =				944.00	
SMALL ENTITY	Reduction by 1/2 for filing by small entity, if applicable. Affidavit must be filed also. (note 37 C.F.R. § 1.9, 1.27, 1.28) (Yes.)				- 472.00	
	Subtotal				472.00	
	Total National Fee \$				472.00	
	Fee for recording the enclosed assignment document \$40.00 (37 C.F.R. § 1.21(h)). (See Item 13 below). See attached "ASSIGNMENT COVER SHEET".				---	
TOTAL	Total Fees enclosed \$				472.00	

*See attached Preliminary Amendment Reducing the Number of Claims.

- Credit Card Payment Form**
- i. ☒ XXX A ~~XXXX~~ in the amount of ~~\$472.00~~ to cover the above fees is enclosed.
- ii. ☐ Please charge Account No. _____ in the amount of \$ _____
A duplicate copy of this sheet is enclosed.

****WARNING:** "To avoid abandonment of the application the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 30 months from the priority date: * * * (2) the basic national fee (see § 1.492(a)). The 30-month time limit may not be extended." 37 C.F.R. § 1.495(b).

WARNING: If the translation of the international application and/or the oath or declaration have not been submitted by the applicant within thirty (30) months from the priority date, such requirements may be met within a time period set by the Office. 37 C.F.R. § 1.495(b)(2). The payment of the surcharge set forth in § 1.492(e) is required as a condition for accepting the oath or declaration later than thirty (30) months after the priority date. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than thirty (30) months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of § 1.136 apply to the period which is set. Notice of Jan. 3, 1993, 1147 O.G. 29 to 40.

3. ☒ A copy of the International application as filed (35 U.S.C. § 371(c)(2)):

NOTE: Section 1.495 (b) was amended to require that the basic national fee and a copy of the international application must be filed with the Office by 30 months from the priority date to avoid abandonment. "The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time, the International Bureau notifies applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage, the applicant normally need only check to be sure the notice from the International Bureau has been received and then pay the basic national fee by 30 months from the priority date." Notice of Jan. 7, 1993, 1147 O.G. 29 to 40, at 35-36. See item 14c below.

- a. ☒ is transmitted herewith.
- b. ☐ is not required, as the application was filed with the United States Receiving Office.
- c. ☐ has been transmitted
- i. ☐ by the International Bureau.
Date of mailing of the application (from form PCT/1B/308): _____
- ii. ☐ by applicant on _____
Date

4. ☒ A translation of the International application into the English language (35 U.S.C. § 371(c)(2)):

- a. ☐ is transmitted herewith.
- b. ☒ is not required as the application was filed in English.
- c. ☐ was previously transmitted by applicant on _____
Date
- d. ☐ will follow.

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202220"TF26900T

5. ☒ Amendments to the claims of the International application under PCT Article 19 (35 U.S.C. § 371(c)(3)):

NOTE: The Notice of January 7, 1993 points out that 37 C.F.R. § 1.495(a) was amended to clarify the existing and continuing practice that PCT Article 19 amendments must be submitted by 30 months from the priority date and this deadline may not be extended. The Notice further advises that: "The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendments. Applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected." 1147 O.G. 29-40, at 36.

- a. ☐ are transmitted herewith.
- b. ☐ have been transmitted
 - i. ☐ by the International Bureau.
Date of mailing of the amendment (from form PCT/1B/308): _____
 - ii. ☐ by applicant on (date) _____
Date
- c. ☒ have not been transmitted as
 - i. ☒ applicant chose not to make amendments under PCT Article 19.
Date of mailing of Search Report (from form PCT/ISA/210.): 30 November 2000
 - ii. ☐ the time limit for the submission of amendments has not yet expired.
The amendments or a statement that amendments have not been made will be transmitted before the expiration of the time limit under PCT Rule 46.1.

6. ☒ A translation of the amendments to the claims under PCT Article 19 (38 U.S.C. § 371(c)(3)):

- a. ☒ is transmitted herewith.
- b. ☐ is not required as the amendments were made in the English language.
- c. ☒ has not been transmitted for reasons indicated at point 5(c) above.

7. ☒ A copy of the international examination report (PCT/IPEA/409)

- ☐ is transmitted herewith.
- ☐ is not required as the application was filed with the United States Receiving Office.

8. ☐ Annex(es) to the international preliminary examination report

- a. ☐ is/are transmitted herewith.
- b. ☐ is/are not required as the application was filed with the United States Receiving Office.

9. ☐ A translation of the annexes to the international preliminary examination report

- a. ☐ is transmitted herewith.
- b. ☐ is not required as the annexes are in the English language.

10. ☒ An oath or declaration of the inventor (35 U.S.C. § 371(c)(4)) complying with 35 U.S.C. § 115

- a. ☐ was previously submitted by applicant on _____
Date
- b. ☒ is submitted herewith, and such oath or declaration
- i. ☒ is attached to the application.
- ii. ☐ identifies the application and any amendments under PCT Article 19 that were transmitted as stated in points 3(b) or 3(c) and 5(b); and states that they were reviewed by the inventor as required by 37 C.F.R. § 1.70.
- c. ☐ will follow.

II. Other document(s) or information included:

11. ☒ An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):

- a. ☒ is transmitted herewith.
- b. ☐ has been transmitted by the International Bureau.
Date of mailing (from form PCT/IB/308): _____
- c. ☐ is not required, as the application was searched by the United States International Searching Authority.
- d. ☐ will be transmitted promptly upon request.
- e. ☐ has been submitted by applicant on _____
Date

12. ☒ An Information Disclosure Statement under 37 C.F.R. §§ 1.97 and 1.98:

- a. ☒ is transmitted herewith.
Also transmitted herewith is/are:
☒ Form PTO-1449 (PTO/SB/08A and 08B).
☐ Copies of citations listed. (Not required.)
- b. ☐ will be transmitted within THREE MONTHS of the date of submission of requirements under 35 U.S.C. § 371(c).
- c. ☐ was previously submitted by applicant on _____
Date

13. ☐ An assignment document is transmitted herewith for recording.

A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 6 of 8)

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JG19 Rec'd PCT/PTO 22 FEB 2002

14. ☒ Additional documents:

- a. ☐ Copy of request (PCT/RO/101)
- b. ☒ International Publication No. WO 01/14672 A1
- i. ☐ Specification, claims and drawing
- ii. ☒ Front page only
- c. ☒ Preliminary amendment (37 C.F.R. § 1.121)
- d. ☐ Other

15. ☒ The above checked items are being transmitted

- a. ☒ before 30 months from any claimed priority date.
- b. ☐ after 30 months.

16. ☐ Certain requirements under 35 U.S.C. § 371 were previously submitted by the applicant on _____, namely:

AUTHORIZATION TO CHARGE ADDITIONAL FEES

WARNING: Accurately count claims, especially multiple dependant claims, to avoid unexpected high charges if extra claims are authorized.

NOTE: "A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

NOTE: "Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

☒ The Commissioner is hereby authorized to charge the following additional fees that may be required by this paper and during the entire pendency of this application to Account No. 08-2441.

☒ 37 C.F.R. § 1.492(a)(1), (2), (3), and (4) (filing fees)

WARNING: Because failure to pay the national fee within 30 months without extension (37 C.F.R. § 1.495(b)(2)) results in abandonment of the application, it would be best to always check the above box.

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2002 FEB 22 10 06 9211

XXX 37 C.F.R. § 1.492(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.492(d)), it might be best not to authorize the PTO to charge additional claim fees, except possible when dealing with amendments after final action.

XXX 37 C.F.R. § 1.17 (application processing fees)

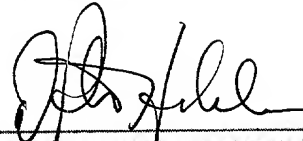
XXX 37 C.F.R. § 1.17(a)(1)-(5) (extension fees pursuant to § 1.136(a).

☐ 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. § 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying . . . issue fee." From the wording of 37 C.F.R. § 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

☐ 37 C.F.R. § 1.492(e) and (f) (surcharge fees for filing the declaration and/or filing an English translation of an International Application later than 30 months after the priority date).



SIGNATURE OF PRACTITIONER

D. Peter Hochberg, Esq.

(type or print name of practitioner)

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Customer No.: 28,672

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 8 of 8)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yeok Sing Sio
Serial No.:
Filed: (Herewith)
International Application: PCT/SG00/00122
IA Filing Date: August 23, 2000
Title: A CATCH
Attorney's Docket: KL0433US (#90232)
Box PCT
Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Please amend the above-identified application prior to examination as follows:

In the Drawings:

Please amend Fig. 10(a) on sheet 7 as indicated in red on the attached drawing.

In the specification:

Please delete claims 25-27.

Please amend claims 3, 4, 6, 8, 10, 12, 14, 16, 17, 20, 22 and 23 as follows:

CLEAN CLAIMS

3. A catch assembly according to claim 1, wherein the shaft of each catch member flexes away from the member to which it is attached as the members are moved apart.
4. A catch assembly according to claim 1, wherein the catch members comprise a material which has a Young's Modulus of more than 62GNm^{-2} (9×10^6 psi).
6. A catch assembly according to claim 1, wherein the catch members comprise metal or plastics.
8. A catch assembly according to claim 1, wherein the shaft moves angularly as it flexes.
10. A catch assembly according to claim 1, wherein the shaft of the catch members is "L" shaped with one end of the L being attached to the respective member and the projection being attached to the other end of the shaft.
12. A catch assembly according to claim 1, having a plurality of said catch

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members.

14. A catch assembly according to claim 12, wherein at least one catch is orientated in a first orientation, and at least one other catch is oriented in a second orientation.
16. A catch assembly according to claim 14, wherein a plurality of catches are oriented in a first orientation and a plurality of catches are oriented in a second orientation wherein the catches of the first orientation are alternately arranged with the catches of the second orientation.
17. A catch assembly according to claim 1, further comprising a lock member wherein the lock member is configured to move the first and second catch members into a locked position.
20. A sliding member assembly, comprising first and second members wherein at least one member slides relative to the other member and a catch assembly according to claim 1.
22. A sliding member assembly according to claim 20, wherein the first member is a sliding door, sliding window, sliding grille or a drawer.
23. A hinged member assembly, comprising first and second members wherein the first member is a hinged member and is capable of being secured in a closed position to the second member, the assembly further comprising a catch assembly for securing the first and second members together, wherein the catch assembly is a catch assembly according to claim 1.

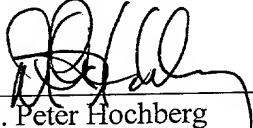
REMARKS

The foregoing amendments to the claims are made to delete multiple-dependencies therein, thus reducing the government filing fee, and to place them in conformance with U.S. patent practice. Further, the drawing has been corrected to properly indicate the catch member. Accordingly, prosecution on the merits hereof is respectfully requested.

Respectfully submitted,

DPH/ck
Enc.: Drawing sheet
D. Peter Hochberg Co., L.P.A.

By: _____


D. Peter Hochberg
Reg. No. 24,603

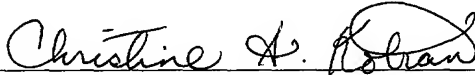
The Baker Building - 6th Floor
1940 East 6th Street
Cleveland, Ohio 44114-2294
(216) 771-3800

EXPRESS MAIL CERTIFICATE

"Express Mail" label number EF170374356US

Date of Deposit February 22, 2002

I hereby certify that the paper(s) identified above, and any noted as being attached, is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed: Box PCT, Commissioner for Patents, Washington, D.C. 20231.



Christine A. Kotran

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yeok Sing Sio
Serial No.:
Filed: (Herewith)
International Application: PCT/SG00/00122
IA Filing Date: August 23, 2000
Title: A CATCH
Attorney's Docket: KL0433US (#90232)

PRELIMINARY AMENDMENT – MARKED UP CLAIMS

3. (Amended) A catch assembly according to [any preceding] claim 1, wherein the shaft of each catch member flexes away from the member to which it is attached as the members are moved apart.
4. (Amended) A catch assembly according to [any preceding] claim 1, wherein the catch members comprise a material which has a Young's Modulus of more than 62GNm^{-2} (9×10^6 psi).
6. (Amended) A catch assembly according to [any proceeding] claim 1, wherein the catch members comprise metal or plastics.
8. (Amended) A catch assembly according to [any preceding] claim 1, wherein the shaft moves angularly as it flexes.
10. (Amended) A catch assembly according to [any preceding] claim 1, wherein the shaft of the catch members is "L" shaped with one end of the L being attached to the respective member and the projection being attached to the other end of the shaft.
12. (Amended) A catch assembly according to [any preceding] claim 1, having a plurality of said [catches] catch members.
14. (Amended) A catch assembly according to [any of claims] claim 12 [to 13], wherein at least one catch is orientated in a first orientation, and at least one other catch is oriented in a second orientation.
16. (Amended) A catch assembly according to [either of claims] claim 14 [and 15], wherein a plurality of catches are oriented in a first orientation and a plurality of catches are oriented in a second orientation wherein

the catches of the first orientation are alternately arranged with the catches of the second orientation.

17. (Amended) A catch assembly according to [any preceding] claim 1, further comprising a lock member wherein the lock member is configured to move the first and second catch members into a locked position.
20. (Amended) A sliding member assembly, comprising first and second members wherein at least one member slides relative to the other member and a catch assembly according to [any of claims] claim 1 [to 19].
22. (Amended) A sliding member assembly according to [either of claims] claim 20 [or 21], wherein the first member is a sliding door, sliding window, sliding grille or a drawer.
23. (Amended) A hinged member assembly, comprising first and second members wherein the first member is a hinged member and is capable of being secured in a closed position to the second member, the assembly further comprising a catch assembly for securing the first and second members together, wherein the catch assembly is a catch assembly according to [any of claims] claim 1 [to 19].

* * *

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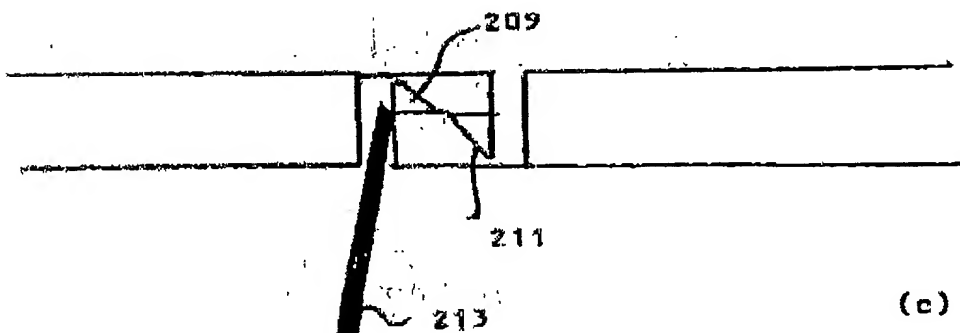
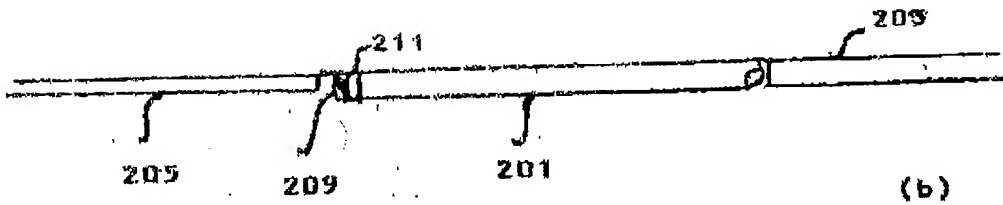
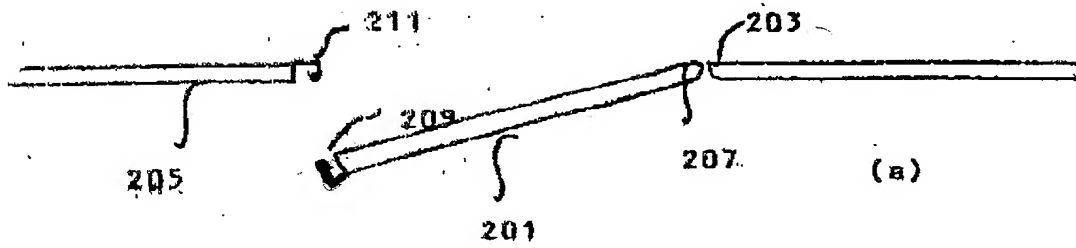


FIG. 10

Amended

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I

A CATCH

The present invention relates to the field of catches. More specifically, the present invention relates to the field of catches for doors (sliding or hinged), windows, drawers, grilles etc.

Sliding doors, grilles, windows etc. suffer from the problem that they can often be easily forced opened by prising the sliding members, i. e. doors, grilles etc. apart. This problem is also encountered in hinged doors, windows, etc. as these are also prone to opening by prising the catch / lock mechanism open which secures the hinged door.

Previously, security devices have been suggested for sliding grilles etc. which prevent the sliding panels being pulled apart to a certain extent. For example, Australian patent AU-27145/95 discloses a device which has inter-engaging teeth which partially prevent sliding grilles from being prised apart. However, under such a force, these teeth will break rendering the security device useless.

The present invention addresses the above problems and, in a first aspect, provides a catch assembly for securing first and second members,

the assembly comprising first and second catch members attachable to the first and second members respectively, each catch member having a projection portion located on a shaft, the projections of the first and second catch members being engageable with one another when the first and second catch members are in a locked position, the first and second shaft portions being flexible, such that as the members are moved apart or together when the catch members are in the locked position, the shafts flex to keep the projections engaged with one another.

The provision of the flexible shafts allows the catch to withstand a greater force prising the first and second members apart. Generally, the shaft of each catch member flexes such that as the first and second members are moved apart, the shaft flexes away from the member to which it is attached.

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As the first and second members are moved, the catch members, or preferably the shafts of the catch members, elastically deform to keep the projections engaged. The shafts of the catch members preferably flex to keep the projections engaged as the first and second members are moved apart or even as they are moved together. The catch members or shafts will deform elastically up to a point, then they will preferably plastically deform. This plastic deformation is used advantageously to provide a secure catch.

Preferably, the catch members or at least the shafts of the catch members will comprise metal or plastics. More preferably, they will comprise at least one of the following UPVC, aluminium, iron or stainless steel. A material with a modulus of preferably at least 62GNm^{-2} (9×10^6 psi) is required, more preferably at least 103GNm^{-2} (15×10^6 psi), even more preferably at least 138GNm^{-2} (20×10^6 psi).

The above materials or materials with the above elastic properties also satisfy the plastic deformation properties preferably required by the present invention. For example, aluminium 6061-T6 has a Young's modulus of 70GNm^{-2} (10.2×10^6 psi) ductile Iron is between 170 and $176\text{GNm}^{-2} \times 10^6$ psi and stainless steel 18.8 is 190GNm^{-2} (27.6×10^6 psi). In general, a force of more than double these values is required to cause plastic deformation.

The shafts flex as the first and second members moved apart or pushed together, the shafts preferably are capable of moving through at least 25° from their rest position as they flex, more preferably, the shafts can move through at least 30° from their rest position.

If the first and second members are being moved apart, for example, if they are prised apart, the separation between the first and second members increases and the shafts flex to maintain the projections in contact. As there is now larger separation between the first and second members, it is difficult to maintain

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application of a strong prising force. For example, if the shafts flex is more than 25°, it is very difficult to apply an effective prising force.

Preferably, the shaft is "L" shaped. One end of this shaft is connected to the member and the projection is located at the other end of the shaft i. e. the free end. As the shafts flex, preferably, the angle at the corner of the "L" shape varies, for example it increases if the members are pulled apart. If the first and second members are pushed together, the angle at the corner of "L" should also increase. More preferably, the first and second catch members are positioned so that they can slide easily over one another when the members are in an unlocked position and engage with each other when the members are in a locked position.

Of course, the shaft does not need to be L-shaped, it could be curved.

The members may be provided with a plurality of catches. Preferably, such catches extend along a whole length of the member to strengthen the entire sliding assembly against unauthorised opening of the doors, grille, windows etc. Also, if one of the catches opens, the remaining catches will hold the first and second members together.

The provision of a plurality of catch members provides far greater security. If the members are pulled apart at a certain point such that they plastically deform at that point, the other members which were not prised apart will remain in their rest position. This line of catches where some of the members are permanently plastically deformed and others are not, gives rise to an irregular line of catches (a wave like structure) which prevents opening of the first and second members. It is not possible to bend the catches which have been permanently deformed back into position without bending another catch out of position. Also, the catch which has deformed will further deform in an attempt to straight it by moving the first and second members.

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In the sliding member assembly, one or both of the first and second members may be slidable.

The first and second members to which the catch members are attached can be members which slide relative to one another, for example the first and second members may be sliding doors alternatively, the second member may be a fixed member and the first member may slide relative to the first member, for example, the second member may be a door post, window frame, drawer support etc. and the first member may be a door, sliding window, or drawer respectively.

Thus, in a second aspect, the present invention provides a sliding member assembly comprising first and second members wherein at least one member slides relative to the other member and a catch assembly, the catch assembly comprising first and second catch members attachable to the first and second members respectively, each catch member having a projection portion located on a shaft, the projections of the first and second catch members being engageable with one another when the first and second catch members are in a locked position, the first and second shaft portions being flexible, such that as the members are moved apart or together when the catch members are in the locked position, the shafts flex to keep the projections engaged with one another.

In the case where the two members slide relative to each other, at least one of the members may be substantially planar, at least one of the catch members may be attached to the planar face of one of the members which faces the other of the first and second members.

Also, one of the catch members may be attached to the edge or close to the edge of one of the members.

In a preferred arrangement, a catch member is provided on opposite sides of the first sliding member, each of the catch members of the sliding member being engageable with catch members located on one or two second members.

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Alternatively, the catch may be used with hinged or so-called swing doors, windows or the like. In this type of arrangement, the second member is hingeably attached to a fixed member such as a door frame etc. The door / window assembly locks by securing the second member to a first member.

Thus, in a third aspect, the present invention provides a hinged member assembly comprising first and second members, wherein the first member is a hinged member and is capable of being secured in a closed position to the second member, the assembly further comprising a catch assembly for securing the first and second members together, the catch assembly comprising first and second catch members attachable to the first and second members respectively, each catch member having a projection portion located on a shaft, the projections of the first and second catch members being engageable with one another when the first and second catch members are in a locked position, the first and second shaft portions being flexible, such that as the members are moved apart or together when the catch members are in the locked position, the shafts flex to keep the projections engaged with one another. In the hinged member assembly, one or both of the first and second members may be hinged.

The first and second members may be only separated by a small distance when in the locked position. Hence, large instruments cannot be used to prise open the two members. Preferably, the minimum distance between the first and second members is twice the size of the catch members such that the catch members can move over one another in a unlocked position. Preferably, the first and second members will be at least 4mm apart, possibly at least 10mm apart.

Preferably, the arrangement further comprises a lock member which moves the first and second catch members into the locked position.

In the locked position, the projections of the first and second catch members interengage. Thus, in order to lock the catch members, the projections must be brought into contact. The lock member may affect movement of the catch

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members themselves. Alternatively, it could cause movement of the first and second members as well as the catch members.

As previously mentioned preferably, a plurality of catch members are provided. In this situation, it is preferable if at least one catch is orientated in a first orientation and at least one other catch is oriented in a second orientation.

More preferably, the first orientation is opposite to the second orientation. This has the advantage that regardless of which sides of the catch are prised apart, the plurality of catches will still hold the device together.

Advantageously, there may be a plurality of catches with the first orientation and a plurality of catches with the second orientation, the catches having the first of orientation are alternately arranged with the catches having the second orientation.

The catch assembly can be fitted to the first and second members via glue, nails, screws etc. Alternatively, the catch members may be integral with at least one of the first and second members. The catch members could also clip, for example, to an edge of the first and / or second members.

The present invention will now be described with reference to the following preferred embodiment in which :

Figure 1 shows an embodiment of the present invention with a catch in an open position;

Figure 2 shows the embodiment of Figure 1 with the catch in a closed position;

Figure 3 shows the catch of Figures 1 and 2 when the members are prised apart;

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Figure 4 shows the catch of Figures 1 to 3 which has been prised open;

Figure 5 shows the catch of Figures 1 to 4 which has been squashed;

Figure 6 shows two members which are slidable relative to each other with a plurality of catches in accordance with the present invention;

Figure 7 shows two slidable members with a plurality of catches alternatively arranged in opposite directions;

Figure 8 shows a schematic plan view of the catch shown in Figures 1 to 5 applied to sliding windows;

Figures 9a to 9b show a drawer using the catch of members 1 to 5; and

Figures 10a to 10c show the catch of Figures 1 to 5 applied to a swing door.

Figure 1 shows a catch 1 which is attached to a first member 3 and a second member 5. The second member 5 is slidable in a first sliding direction 7 relative to the first member 3. The catch 1 has a first catch member 9 and a second catch member 11. The first catch member 9 has an L shaped shaft 13 which is integral with the first sliding member (3) at one end 15. A first projection 17 is located at the other end of shaft 13. A first projection 17 is also integral with shaft 13 at its free end

Similarly, second catch member 11 comprises an L shaped shaft 19 and a second projection 21. The second catch member 11 is similar in construction to the first catch member 9, but is rotated through 180° to the first catch member 9. The distance (d) between the first 3 and second 5 members is such that the second

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member 5 can freely slide in the first sliding direction 7 relative to the first member.

In Figure 1, the catch is shown in the unlocked position, i. e. the projection 17, 21 are not interengaged with each other. The catch may be moved into the locked position by lock member 4. In this particular example, lock member 4 acts to pull the first catch 9 towards itself such that the projection 17 and 21 interengage. Alternatively, lock member 4 could work by pushing the elongate part 12 of shaft member 11 away from the lock member 4. This also allows the first and second projections 17 and 21 to engage.

Figure 2 shows the catch member in its locked position. The lock member 4 is not shown here, the separation distance (d) between the first member 3 and the second member 5 is increased such that the first and second projections 17, 21 engage with one another. Inner surfaces 29, 31 of the two projections 17, 21 abut one another such that the second member 5 cannot be moved along first sliding direction 7. Hence, the sliding assembly is in a locked position.

Figure 3 shows the arrangement of Figure 2 where the first member 3 and the second member 5 are prised apart to extend the separation distance (d). In this forced position, the angle 23 of the L shaped first and second shafts 13, 19 extends to greater than 90° . Also, the outside angle 25, 27 at which the first 13 and the second 19 shafts respectively meet the first 3 and second 5 members also extends to more than 90° . In this strained position, the abutting surfaces 29, 31 of the projections 17, 21 still engage with each other. Hence, the catch members 9, 11 still remain locked in the position holding the sliding assembly together.

Figure 4 shows the catch where the force applied to the catch members has exceeded the plastic deformation limit and the catch members have permanently deformed. This permanent deformation of the catch members also prevents the door from being open.

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As has been previously described, preferably, the doors have been provided with a plurality of catches. Only the catches at the point where the force is applied will deform. Therefore, only a small part of the door will have catches which have plastically deformed. This deformation in just a small part of the door also causes the door to be prevented from opening.

Figure 5 shows a further safety feature of the catch. In this case, a force has been applied at an opposing end of the sliding members to that where the catches are. This causes the sliding members 3 and 5 to be pushed together. The catch members 9 and 11 are pushed together and plastically deform, here, the deformation is seen to occur in the shorter parts of the L-shaped shafts 9a and 11a and deformed in preference to the longer parts of the shafts 9b and 11b.

It will be preferred for the doors to be provided with a plurality of catches of the type shown in Figures 1 to 5. This is schematically shown in Figure 6. Here, only a part of the L section shaft 13, 19 is shown. If one of the catch member opens, the other catch members should remain shut so preventing the members 3, 5 from being prised apart.

It will be appreciated that there are preferential directions for providing the prising force. Figure 7 shows an arrangement wherein the catches 1 are alternately arranged such that the middle catch 41 is oppositely orientated with respect to adjacent catches 43, 45. Middle catch 41 is a mirror image through the centre of the catch 1 about the abutting surfaces 29, 31. This catch provides a very strong lock as there is no single preferential direction for applying prising force for all of the catches.

Figure 8 shows a sliding window arrangement. Window panes 101 and 103 can slide in directions 105 and 107. The window panes are supported by window frame 109. The window is shut when the window panes 105 and 107 are positioned so that they occupy the whole of the area defined by window frame 109. The furthest end 111, 113 of window panes 103, 101 from the window frame 109 when the

window is in the closed position each have a catch member 115, 117 of the type described with reference to Figures 1 to 5. Ideally, there is a plurality of catch members. However, for simplicity only one catch member is shown here. The window locks by moving the relative position of catch members 115, 117 into the locked position (Figure 2) such that the projection (not shown) on the catch members 115, 117 are interengaged.

If a trespasser attempts to get into the windows by prising open the furthest points of the panes 111, 113, then the catch members 115, 117 flex apart in the manner shown in Figure 3. However, if a force is applied where the window pane meets the frame 109, then this causes the catch members 115, 117 to be pushed together in the manner shown in Figure 5.

Figure 9 shows the catch of the present invention applied to a drawer. The drawer 121 is slidable relative to a housing 123, for example, a cabinet etc. The housing has drawer supports 125 and 127, a first catch member is located on both of the supports 125, 127. However, for simplicity, only the interaction of the drawer with one of the catch members will be described. The drawer 121 is provided with a catch member 129 which is intended to interlock with catch member 131 provided on support 125. The catch member 129 is provided on the side of the drawer 121 close to the front end of the drawer. The front end of the drawer 121 is defined as the end of the drawer which is visible when the drawer is shut. To shut the drawer, the drawer 121 is pushed backwards into the housing 123. When the drawer 121 is pushed into the closed position, the catch members 129 and 131 interengage on both sides of the drawer. Thus preventing removal of the drawer.

Figure 9b shows the drawer in the closed position within the housing 123. The catch can be configured so that the projections 129 and 131 automatically engage when the drawer 121 is pushed into position. Alternatively, a lock member or some other lock mechanism may be provided so that the catch members 129 and 131 only interengage when the lock is activated.

In Figure 9c, a screwdriver or other such implement is inserted into the catch mechanism to try to force open the drawer. The screwdriver 135 causes the right-hand catch members 131 and 129 to interengage more strongly. The drawer is pushed in the direction of the left-hand support 125. The catch members 129 and 131 on the right-hand side will interengage more strongly. As the drawer is pushed towards support 125, the left-hand catch members 129 and 131 are also interengaged more strongly. If the force applied to the drawer by screwdriver 135 is strong enough at least one of the catch members 129, 131 will plastically deform.

Figures 10a to 10e show the present invention applied to a hinged door. Figure 10a shows a hinged door 201 which is hingeably connected to fixed support 203. The door is closed when it is in line with fixed supports 205. The free end of the door 201, i. e. the end of the door which is opposite to a hinge 207 is provided with a first catch member 209. A second catch member 211 is provided on support 205.

Figure 10b shows the door when it is shut. The catch members 209 and 211 interlock to cause the door 201 to be locked into position in line with support 205 and 203.

The catch members 209 and 211 may interlock as the door is put into the closed position. Alternatively, a further lock may be provided to cause projections on catch members 209 and 211 to interengage. A screwdriver 213 can be used to push members 209 and 211 into the locked position. The screwdriver 213 cannot be used to prise open the catch members. As it will only force them more into engagement. Eventually, the catch members will start to plastically deform.

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CLAIMS:

- 1 A catch assembly for securing first and second members, the assembly comprising first and second catch members attachable to the first and second members respectively, each catch member having a projection portion located on a shaft, the projections of the first and second catch members being engageable with one another when the first and second catch members are in a locked position, the first and second shaft portions being flexible, such that as the members are moved apart or together when the catch members are in the locked position, the shafts flex to keep the projections engaged with one another.
- 2 A catch assembly according to claim 1, wherein at least a part of one of the catch members is capable of permanently deforming as the first and second members are moved.
- 3 A catch assembly according to any preceding claim, wherein the shaft of each catch member flexes away from the member to which is attached as the members are moved apart.
- 4 A catch assembly according to any preceding claim, wherein the catch members comprise a material which has a Young's Modulus of more than 62GNm^{-2} (9×10^6 psi).
- 5 A catch assembly according to claim 4, wherein the catch members comprise a material which has a Young's modulus of at least 103GNm^{-2} (15×10^6 psi).
- 6 A catch assembly according to any preceding claim, wherein the catch members comprise metal or plastics.

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- 7 A catch assembly according to claim 6, wherein the catch members comprise at least one of UPVC, aluminium, iron or stainless steel.
- 8 A catch assembly according to any preceding claim, wherein the shaft moves angularly as it flexes.
- 9 A catch assembly according to claim 8, wherein the shaft is capable of moving through at least 25° from its rest position during flexing.
- 10 A catch assembly according to any preceding claim, wherein the shaft of the catch members is "L" shaped with one end of the L being attached to the respective member and the projection being attached to the other end of the shaft.
- 11 / A catch assembly according to claim 10, wherein the shaft flexes such that the angle at the corner of the L is varied as the members are moved apart or together.
- 12 A catch assembly according to any preceding claim, having a plurality of said catches.
- 13 A catch assembly according to claim 12, wherein the plurality of catches are arranged along a whole length of at least one of the first and second members.
- 14 A catch assembly according to any of claims 12 to 13, wherein at least one catch is orientated in a first orientation, and at least one other catch is oriented in a second orientation.
- 15 A catch assembly according to claim 14, wherein the first orientation is substantially opposite to the second orientation.

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- 16 A catch assembly according to either of claims 14 and 15, wherein a plurality of catches are oriented in a first orientation and a plurality of catches are oriented in a second orientation wherein the catches of the first orientation are alternately arranged with the catches of the second orientation.
- 17 A catch assembly according to any preceding claim, further comprising a lock member wherein the lock member is configured to move the first and second catch members into a locked position.
- 18 A catch assembly according to claim 17, wherein movement of the lock affects movement of a catch member.
- 19 A catch assembly according to claim 17, wherein movement of the lock affects movement of a member and a catch member.
- 20 A sliding member assembly, comprising first and second members wherein at least one member slides relative to the other member and a catch assembly according to any of claims 1 to 19.
- 21 A sliding member according to claim 20, comprising at least two first catch members at least wherein a first catch member being located on opposing sides of the first member.
- 22 A sliding member assembly according to either of claims 20 or 21, wherein the first member is a sliding door, sliding window, sliding grille or a drawer.
- 23 A hinged member assembly, comprising first and second members wherein the first member is a hinged member and is capable of being secured in a closed position to the second member, the assembly further comprising a

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catch assembly for securing the first and second members together, wherein the catch assembly is a catch assembly according to any of claims 1 to 19.

- 24 A hinged member assembly according to claim 23, wherein the first member is a hinged door, hinged window or hinged grille.
- 25 A catch assembly as substantially hereinbefore described with reference to any of the accompanying drawings.
- 26 A sliding member assembly as substantially hereinbefore described with reference to any of Figures 1 to 9.
- 27 A hinged member assembly as substantially hereinbefore described with reference to Figure 10.

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ABSTRACT**A Catch**

A catch for sliding or hinged doors, windows, grilles of a swing opening member such as a door, window etc. having a catch for preventing unauthorised opening of the door etc. The catch has inter-engaging projections which are mounted on flexible shafts, if the sliding members are prised apart, the flexible shafts deform such that the projections keep engaged and prevent unauthorised opening of the sliding members.

Fig. 1

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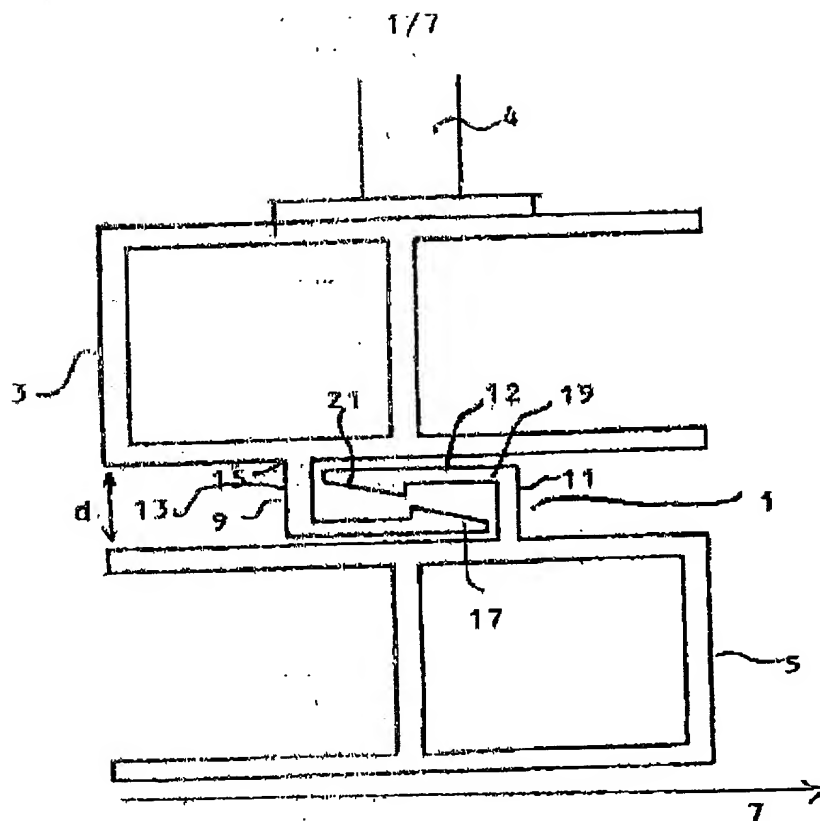


FIG. 1

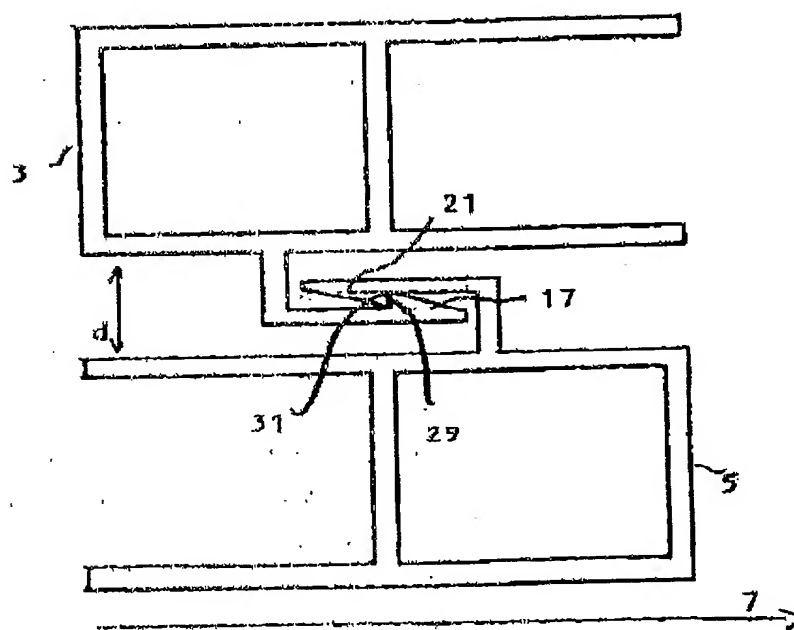
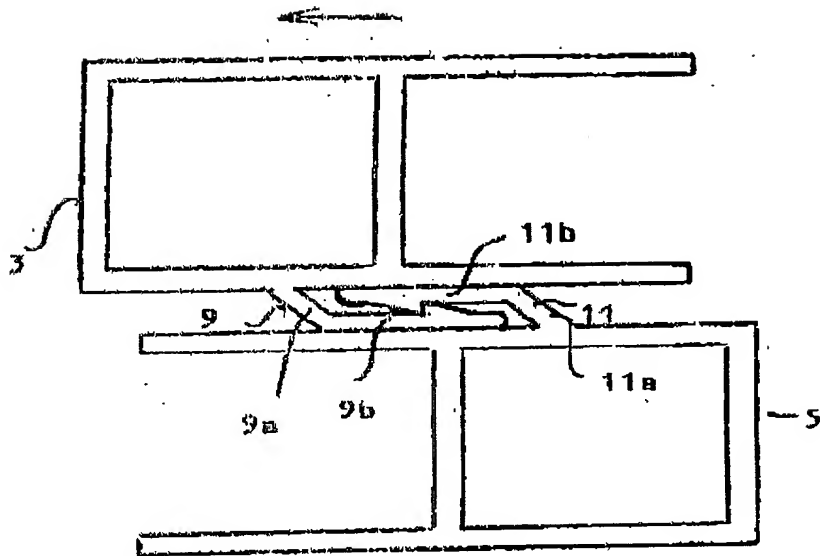


FIG. 2

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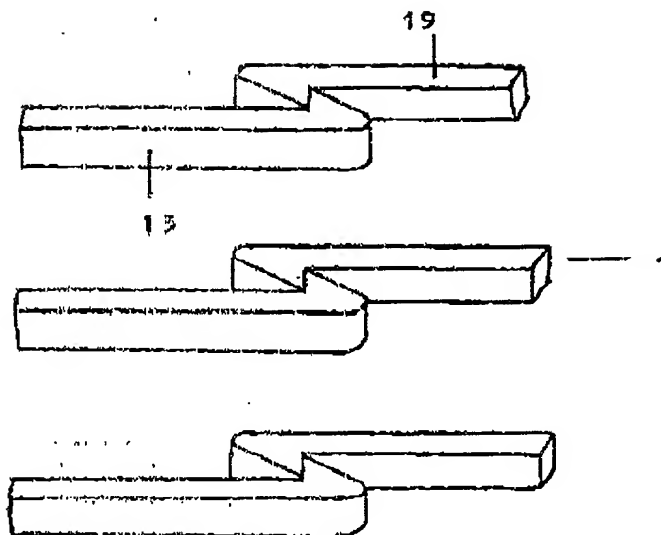


FIG. 6

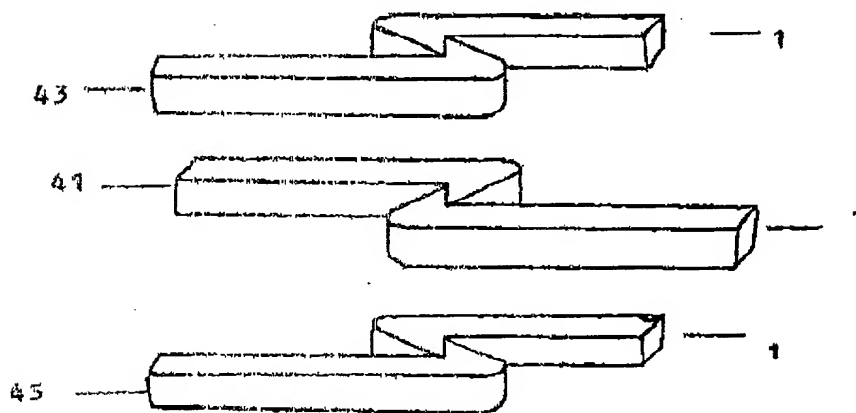


FIG. 7

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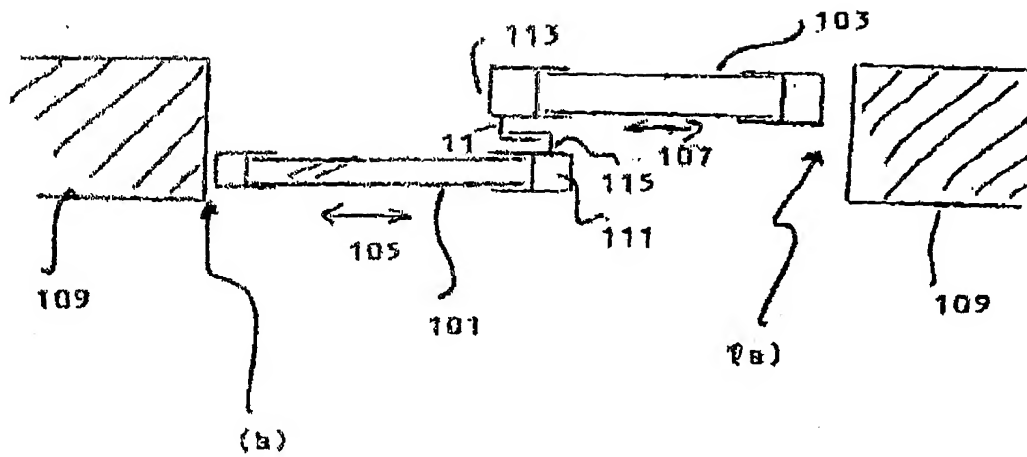


FIG. 8

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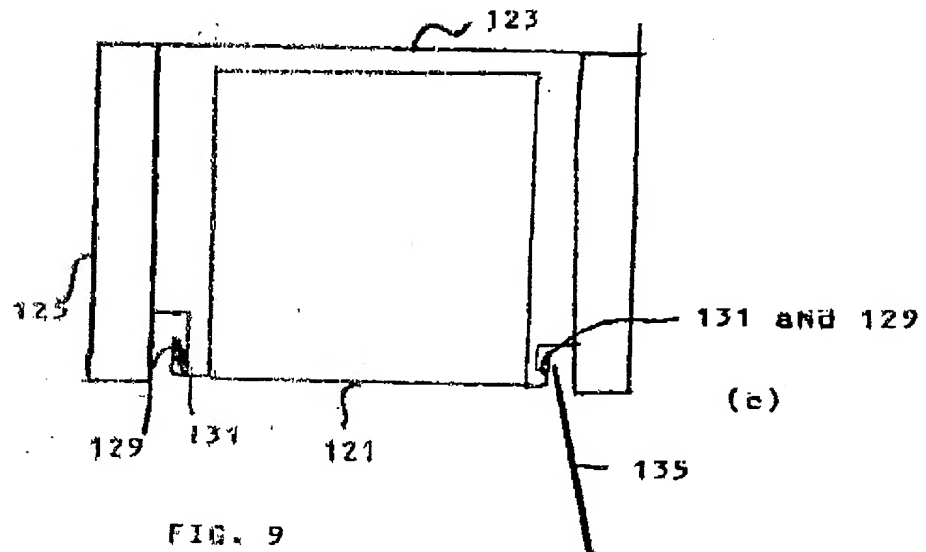
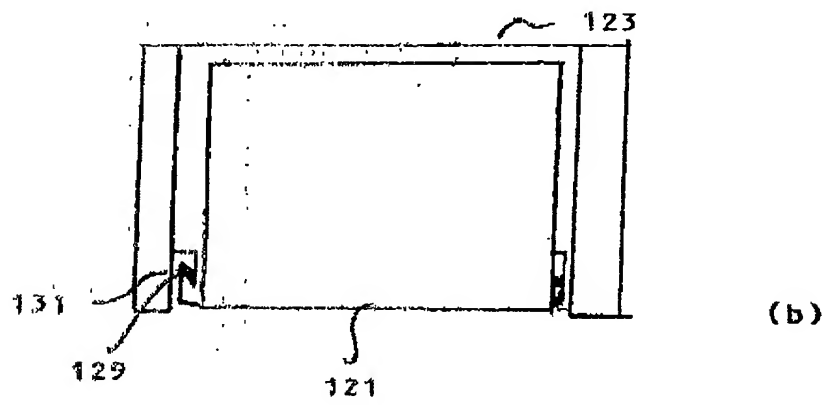
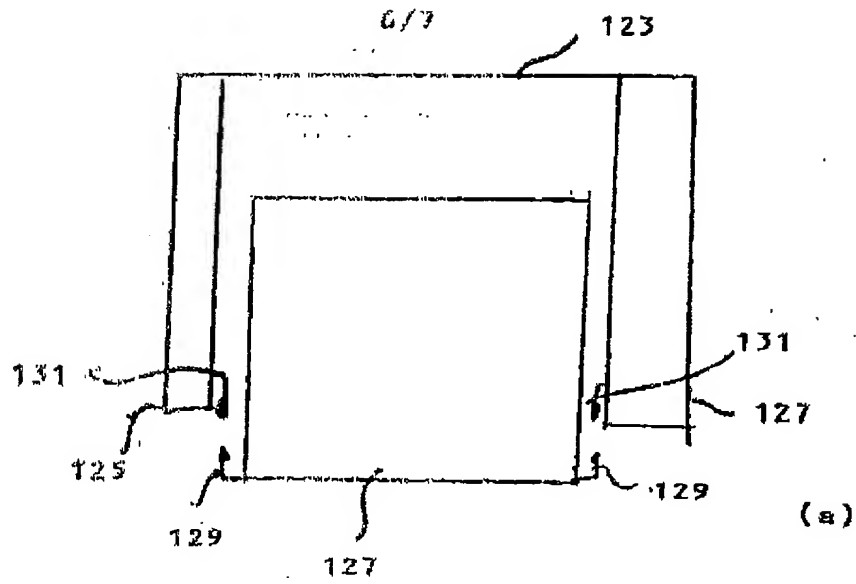


FIG. 9

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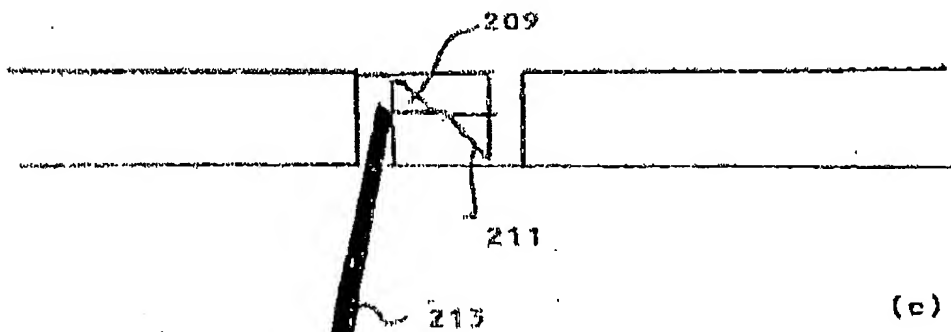
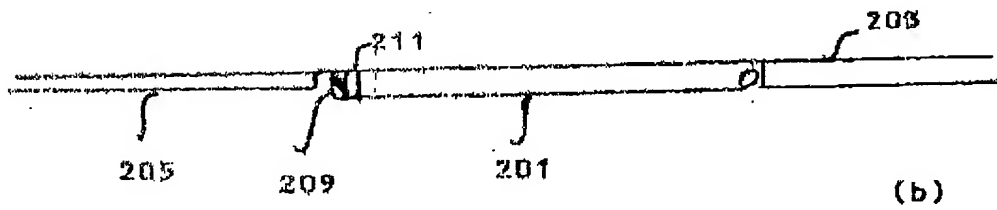
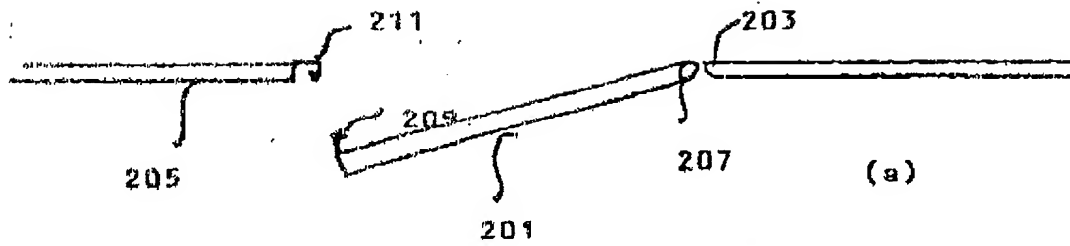


FIG. 10

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COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL,
DIVISIONAL, CONTINUATION OR CIP)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is of the following type: (check one applicable item below)

- ☐ original
☐ design

NOTE: If the declaration is for an International Application being filed as a divisional, continuation or continuation-in-part application do not check any of next two items and check appropriate one of last three items.

- ☒ national stage of PCT
☐ supplemental

NOTE: If one of the following 3 items apply then complete and also attach ADDED PAGES FOR DIVISIONAL, CONTINUATION OR CIP.

- ☐ divisional
☐ continuation
☐ continuation-in-part (CIP)

INVENTORSHIP IDENTIFICATION

My residence, post office address and citizenship are as stated below next to my name, I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

A CATCH

SPECIFICATION IDENTIFICATION

the specification of which: (complete (a), (b), or (c))

- (a) ☒ is attached hereto.
(b) ☐ was filed on as ☐ Serial No. _____ or
☐ Express Mail No. _____, as Serial No. not yet known
and was amended on _____ (if applicable).

- (c) (X) was described and claimed in PCT International Application
No. PCT/SG00/00122 filed on August 23, 2000 —
and as amendment under PCT Article 19 on _____ (if any).

ACKNOWLEDGEMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations. Sec. 1.56(a).

- () In compliance with this duty there is attached an information
disclosure statement. 37 CFR 1.97.

PRIORITY CLAIM

I hereby claim foreign priority benefits under Title 35, United States Code, Sec. 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

(complete (d) or (e))

- (d) () no such applications have been filed.
(e) (X) such applications have been filed as follows

NOTE: Where item (e) is entered above and the International Application which designated the U.S. claimed priority check item (e), enter the details below and make the priority claim.

EARLIEST FOREIGN APPLICATION(S), IF ANY FILED WITHIN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

COUNTRY	APPLICATION NO.	DATE OF FILING (month, day, year)	PRIORITY CLAIMED UNDER 37 USC 119
_____	_____	_____	() YES NO ()
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ALL FOREIGN APPLICATION(S), IF ANY FILED MORE THAN 12 MONTHS
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

Singapore Serial No. 9904110-5 filed August 23, 1999 ✓

PCT/SG00/00122 filed August 23, 2000 ✓

POWER OF ATTORNEY

4- As a named inventor, I hereby appoint D. Peter Hochberg, Reg. No. 24,603, Katherine R. Vieyra, Reg. No. 42,155, Sean Mellino, Reg. No. 48,817, and William H. Holt, Reg. No. 20,766, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

80 Full name of sole or first inventor: Yeok Sing Sio


Inventor's signature

Date

21 February 2002

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Full name of second joint inventor, if any: _____

Inventor's signature

Date

Country of Citizenship

Residence

Post Office Address

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